

Influences of Precursors (Glycerol, Chloride) on the Contents of 3-MCPD Fatty Acid Esters (3-MCPD Esters)

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Feldfunktion geändert

The main amount of vegetable oils produced for nutrition has to be refined to comply with technological and quality needs. In December 2007, evidence of 3-MCPD esters was proven by the CVUA Stuttgart in refined vegetable oils and to a minor degree in steam-treated cold-pressed vegetable oils in different concentrations (0.1 mg/kg to 4 mg/kg) (1). These results are significant due to the fact that the Joint FAO/WHO Expert Committee on Food Additives (JECFA) set a tolerable daily intake (TDI) of 2 µg/kg BW/day for free 3-MCPD in 2001 (2). The Federal Institute for Risk Assessment (BfR) assumed that 3-MCPD esters are completely decomposed to 3-MCPD and therefore the TDI for 3-MCPD has to be adopted (3). Particularly in infant-food, the level of 3-MCPD esters may exceed the adopted TDI-value. Research done by the CVUA and the Max Rubner-Institute (MRI) showed that in particular the deodorisation step has to be considered as critical in the formation of 3-MCPD esters. Mainly chloride, glycerol, mono- and diacylglycerides are regarded as possible precursors of 3-MCPD esters.

The objective of the discussed experimental series is to clarify the relation between the formation of 3-MCPD esters and the amount of certain precursors, For this purpose virgin rapeseed oil with different levels of glycerol or glycerol and tetrabutylammonium chloride respectively was treated for 2 h by 240 °C and analysed for its contents of 3-MCPD esters.

1. http://www.cvuas.de/pub/beitrag.asp?subid=1&Thema_ID=2&ID=717: **3-MCPD-Ester in raffinierten Speisefetten und Speiseölen - ein neu erkanntes, weltweites Problem 2007**
2. Scientific Committee on Food: **Opinion on 3-Monochloro-Propane-1,2-Diol (3-MCPD) updating the SCF opinion of 1994** adopted on 30. May 2001
3. Stellungnahme Nr. 047/2007 des BfR vom 11. Dezember 2007: **Säuglingsanfangs- und Folgenahrung kann gesundheitlich bedenkliche 3-MCPD-Fettsäureester enthalten**